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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/534,281	04/10/2006	Graham Paul Hopkins	41557-218322 RK	1136
26694	7590	03/17/2008		
VENABLE LLP P.O. BOX 34385 WASHINGTON, DC 20043-9998			EXAMINER VU, MINDY D	
			ART UNIT 2884	PAPER NUMBER
			MAIL DATE 03/17/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/534,281	Applicant(s) HOPKINS ET AL.	
	Examiner MINDY VU	Art Unit 2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/9/05 & 4/10/06</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

This Office Action is in response to Applicant's application filed April 10, 2006.

The Examiner has considered the international preliminary examination report (IPER).

Information Disclosure Statement

The information disclosure statement filed May 09, 2005 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 5, 8-9 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Sun et al. (US 6,469,303, hereafter Sun).

With respect to independent Claim 1, Sun discloses a gas sensor 300 (Fig. 5) comprising a chamber arranged to admit gas (Col. 2 lines 51-57), one or more radiation

sources 126, a plurality of detectors (128A, 128B) sensitive to radiation from the one or more sources, and a plurality of respective reflective curved surfaces 114, the detectors each being arranged to receive radiation from the one or more sources reflected by the respective curved surfaces of curvature such that light from the one or more sources is focused onto each detector (Col. 7 lines 30-47).

With respect to Claim 5, Sun discloses a central region between the detectors, there being one source being located in the central region (Fig. 5).

With respect to Claim 8, Sun discloses the detector assembly 128A includes reference detector 130 (Col. 7 lines 39-40).

With respect to Claim 9, Sun discloses the source is an infrared source (Col. 7 lines 34-35).

With respect to Claim 16, Sun discloses the source is generally omnidirectional (Fig. 5).

Claims 1-7, 9, 11 and 14-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Martin (US 6,194,735).

With respect to independent Claim 1, Martin discloses a gas sensor (A) comprising a chamber (gas cell 1, Fig. 2) arranged to admit gas, one or more radiation sources (2a, Fig. 1), a plurality of detectors (two detectors are connected to 6 & 7 ports, Figs. 1 & 8) sensitive to radiation from the one or more sources, and a plurality of respective reflective curved surfaces (Col. 7 lines 56-64), the detectors each being arranged to receive radiation from the one or more sources reflected by the respective

curved surfaces of curvature such that light from the one or more sources is focused onto each detector (Col. 10 lines 1-24).

With respect to Claim 2, Martin discloses the source is located substantially at a first focus of each respective reflective curved surface (Fig. 8).

With respect to Claim 3, Martin discloses each detector is located substantially at a second focus of each respective reflective curved surface (Figs. 3 & 8).

With respect to Claim 4, Martin discloses the reflective curved surfaces are part ellipsoidal surfaces (Col.8 lines 50-52).

With respect to Claim 5, Martin discloses a central region between the detectors, there being one source being located in the central region (Fig. 8).

With respect to Claim 6, Martin discloses one of the detectors is at a focus of a first part ellipsoidal surface, a second detector is at a focus of a second part ellipsoidal surface and the first and second ellipsoids share a common virtual focus (Fig. 8).

With respect to Claim 7, Martin discloses the first sensor is arranged to detect a first predetermined gas and the second sensor is arranged to detect a second predetermined gas (Col. 10 lines 1-6).

With respect to Claim 9, Martin discloses the light source is an infrared light source (Col. 1 lines 42-44).

With respect to Claim 11, Martin discloses the one radiation source is arranged with the plurality of detectors around the one source, each respective reflective surface being arranged to reflect light from the one source to the respective detector (Fig. 8).

With respect to Claim 14, Martin discloses each detector is arranged to receive radiation from a narrow solid angle (Fig. 8).

With respect to Claim 15, Martin discloses the one or more radiation sources comprising a plurality of radiation sources, the detectors each being arranged to receive radiation from a respective one of the plurality of radiation sources reflected by a respective one of the curved surfaces (Col. 6 lines 33-38).

With respect to Claim 16, Martin discloses the one source is generally omnidirectional (Fig. 8).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun et al. (US 6,469,303, hereafter Sun) in view of Parry et al. (US 5,973,326, hereafter Parry).

With respect to Claim 10, Sun discloses the source and the reflecting surfaces but lacks the source is arranged to heat substantially all the surfaces from which light is reflected to a temperature above ambient temperature. Parry discloses it is known for arranging the source to heat substantially all the reflective surfaces in a gas monitor (Col. 2 lines 21-26). Thus, it would have been obvious to one of ordinary skill in the art

at the time of the invention was made to heat the source as suggested by Parry in view of reducing the risk of condensation on optical surfaces.

With respect to Claim 11, Sun discloses the radiation source is arranged with the plurality of detectors around the source, but lacks each respective reflective surface being arranged to reflect light from the source to the respective detector. Parry discloses a gas monitor comprising a housing using the ellipsoidal reflective surfaces as arranged in Fig. 3 to direct emitted radiation along a plurality of routes having substantially the same path length. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the interior chamber of Sun with the ellipsoidal reflective surfaces as suggested by Parry in view of giving an accurate measure of the gas concentration with a compact device.

With respect to Claim 12, Parry discloses a further reflective surface so arranged that light from the one radiation source is reflected by the further reflective surface onto each respective reflective curved surface and then to each respective detector (Fig. 1).

With respect to Claim 13, Parry discloses the further reflective surface comprises an annular reflective surface (Fig. 2).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MINDY VU whose telephone number is (571)272-8539. The examiner can normally be reached on M-F 9am - 5:30pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mv

/David P. Porta/

Supervisory Patent Examiner, Art Unit 2884